

This question paper contains 5 printed pages]

V—38—2017

FACULTY OF SCIENCE

B.Sc. (Second Year) (Fourth Semester) EXAMINATION

OCTOBER/NOVEMBER, 2017

CHEMISTRY

Paper VIII

(Organic and Inorganic Chemistry)

(MCQ + Theory)

(Sunday, 12-11-2017)

Time : 2.00 p.m. to 4.00 p.m.

Time—2 Hours

Maximum Marks—40

- N.B. :—*
- (i) Attempt *All* questions.
 - (ii) *All* questions carry equal marks.
 - (iii) Use separate answer sheet (OMR sheet) for MCQ No. 1.
 - (iv) Use black ballpoint pen to darken the circle of correct choice in OMR sheet.
 - (v) Use only one answer book for Sections A and B.

MCQ

1. Select the *correct* answer for each of the following multiple choice questions :

- (1) CH_3OCH_3 and $\text{CH}_3\text{CH}_2\text{OH}$ are
 - (A) Chain isomers
 - (B) Functional isomers
 - (C) Position isomers
 - (D) Metamers

P.T.O.

- (2) A molecule is said to be chiral if it does not contain
- (A) Plane of symmetry (B) Centre of symmetry
(C) Axis of symmetry (D) All of these
- (3) Glucose when reduced with sodium borohydride or sodium amalgam and water gives
- (A) Sorbitol (B) *n*-hexane
(C) Sodium gluconate (D) Glyceraldehyde
- (4) Starch, cellulose are
- (A) Monosaccharides (B) Disaccharides
(C) Trisaccharides (D) Polysaccharides
- (5) Structure of urea is
- (A) NH_2CONH_2 (B) CH_3CONH_2
(C) $\text{NH}_2 - \text{NH}_2$ (D) $\text{C}_6\text{H}_5\text{NH.COCH}_3$
- (6) Urea reacts with hydrazine to give
- (A) N-acetyl urea (B) Semicarbazide
(C) Cyanamide (D) Biuret
- (7) Boron trifluoride can be used in the formation of
- (A) Acids (B) Esters
(C) Diketones (D) All of these
- (8) The General Electronic configuration of transition elements is
- (A) $(n-1)d^{1-5}$ (B) $(n-1)d^{1-10}ns^1$
(C) $(n-1)d^{1-10}ns^{1-2}$ (D) $(n-1)d^{10}ns^2$

- (9) Which of the following Tripositive Lanthanide ion has zero magnetic moment
- (A) La^{+3} (B) Lu^{+3}
(C) Ce^{+3} (D) Only (A) and (B)
- (10) Which of the following is *incorrect* statement ?
- (A) Binding energies of $4f$ are higher than $5f$.
(B) Lanthanides form oxocations whereas actinides do not form oxocations.
(C) All Actinides are Radioactive.
(D) ' $4f$ ' electrons have greater shielding effect than $5f$ electrons.

Theory

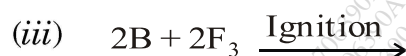
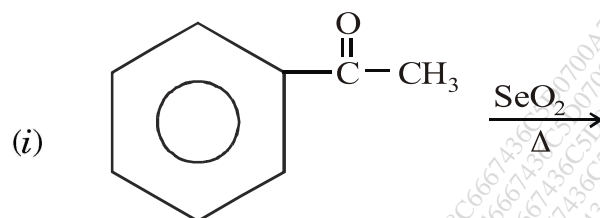
Section A

(Organic Chemistry)

2. Solve any *two* of the following :
- (a) What is cis-trans isomerism ? Give E and Z forms of :
- (i) 2-pentene
(ii) Benzaldoxime.
- (b) What are Carbohydrates ? How are they classified ?
- (c) How will you prepare aniline from :
- (i) Phenol;
(ii) Nitrobenzene ?
- What is the action of the following on urea :
- (i) Heat
(ii) HNO_3
(iii) $\text{NH}_2 - \text{NH}_2$?

P.T.O.

(d) Predict the products :



3. Solve any *two* of the following :

(a) Write short notes on :

(i) Relative configuration

(ii) Enantiomers.

(b) Define the following terms :

(i) Epimerisation

(ii) Mutarotation

(iii) Anomers

(iv) Oligosaccharides

(v) Optically active substance.

(c) What is the action of following on nitrobenzene ?

(i) $\text{HNO}_3 / \text{H}_2\text{SO}_4$

(ii) $\text{Cl}_2 / \text{FeCl}_3$

- (iii) $\text{CH}_3\text{ONa} / \text{CH}_3\text{OH}$
 - (iv) Zn / NaOH
 - (v) Sn/HCl and NaOH .
- (d) Give the preparation method of ozone. How is ozone used in the synthesis of :
- (i) aldehyde;
 - (ii) hydroxy aldehyde ?

Section B

(Inorganic Chemistry)

4. Solve any *two* of the following :
- (a) Give the comparison of II nd and III rd transition series elements with first transition series elements.
 - (b) Write in brief compounds formed by Palladium and Platinum.
 - (c) Explain magnetic properties of Lanthanides.
 - (d) Give electronic configuration of Actinides.